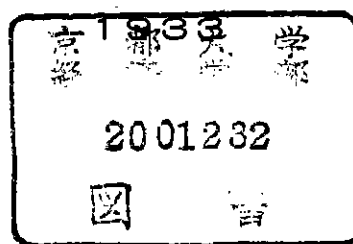


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## ON OUTPUT-CURTAILING IN MODERN INDUSTRY

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### FOREWORD

The wholesale shrinkage of demand force forms a vital factor of the prevailing economic crisis throughout the world. In consequence, it has been accompanied by a tendency of depreciation in the market prices of various manufactures. It is generally recognized that, if the fall of the market prices is impeded by some artificial means, the amount of demand for productive goods and, in consequence, the amount of productive output, will be inevitably reduced. Indeed, as Pigou has pointed out, the stability of productive output is synonymous with the instability of prices, and the stability of prices is synonymous with the instability of output.

Inasmuch as industrial production is undertaken for the purpose of profit-making, the maintenance of prices greater in amount than cost of production is a fundamental condition. When, therefore, a fall is registered in prices due to an over-balancing of between normal demand and the amount of output, the productive margin will vanish, followed by a reduction in the amount of market stock and a return to normal prices—provided there are no circumstances that may prevent functioning of the principles on which the Classical laissez-faire stands.

However, in the organisation of the modern industrial production, there exist circumstances that tend to impede the smooth functioning of industrial principles which are calculated to adjust the over-balance between the amount of market output and that of normal demand. Thus, there is a tendency for industries to continue their over-production

for a considerable long period, ever when market prices have gone down below cost of production, inasmuch as the industries are in a position to carry on free competition. This point has been observed by scholars like Wiendenfeld and Schwalenbach. It is clear the sales competition under such circumstances is bound to drive the weaker industries into a state of destitution and ultimately to destruction. Scholars agree that the industrial combination known as the cartel was born of desires to escape from such destructive competition and to effect industrial relief.

We have an example of all this in our country today. Many industrial cartels here are endeavouring to avoid or mollify cut-throat competition, or to maintain or raise the market prices of their products.

Needless to state, the object of industrial cartels wishing to check destructive competition and the fall of market prices at a time of depression like the present can be realized only by limiting or curtailing productive output. Thus, even among those who are not experiencing any difficulty in getting the supply of capital the curtailing of output by means of organisation has become a vogue. It has been reported that the curtailing of output by the industrial monopolies in our country tended to raise the market prices of productive goods. But will these monopolies be able to attain their fundamental object of maintaining, or increasing or restoring the rates of their profit-making only by this means? Suppose the distress of capitalistic production is not relieved only by the reduction of supplies for the market through the curtailing of output. In what direction will one look about for methods of relief?

I shall attempt to give answers to these questions in the present article.

## I

When a monopoly in a given branch of industry limits the output through its organised power and in consequence

the amount of its stock is reduced, the prices of its commodities will necessarily rise, provided the circumstances on the part of the consuming public are left out of consideration.

By "monopoly" here is not meant absolute monopoly or monopoly maintained by natural scarcity of products or by legal limitation, for such a form of monopoly implies the total absence of competition in the market. By "monopoly" here is meant that which exists in the economic world when a supplier or a combination of suppliers controls the amount of supply which is powerful enough to influence severely the formation of the market prices, although they may not be able to control the whole supply.

When a monopoly at a crisis like the present one attempts to increase its power of earning through the curtailing of its output, it is essential that the reduction in stock due to output-curtailing should cause a rise in prices. However, no one will overlook the fact that such is not the sole condition. One should consider another condition, namely, the question as to what will be the development of cost of production when output is curtailed in a given industry.

Here, the decisive question is whether the product of decreased sales quantities by the enhanced price unit will exceed the whole production cost of the industry and whether the excess, if produced, will expand. In judging the advisability of output-curtailing by monopolies as their business policy in times of crisis, one should study the development of cost of production which is made as a result of such a policy.

All agree that the concept of cost of production falls under the head of industrial cost. Although many scholars have endeavoured to define industrial cost, there is no unified conception of its nature. However, I am of the opinion that the ideas of Leitner and Schmalenbach are most appropriate and acceptable. True, these scholars show some difference in the forms of their expression, but they agree

on the fundamental conception of what industrial cost is.

My own conception of general industrial cost is identical in substance with that of these scholars, although it takes a different form of expression. I define industrial cost as value-loss occasioned as means of production in the process of industry. And its amount must always be expressed in terms of monetary value. Inasmuch as industrial cost is thus value-loss due to the employment of means in industrial process, its ultimate recovery with a surplus value through the prices of commodities (which are sold in general transaction) is presupposed. Industrial cost being as explained above, the precise pre-determination of the amount of value-loss for the productive means of commodities to be sold and of the calculated prices of the commodities is an indispensable condition for the rational control of industry. The accounting of value-loss for productive means in industrial process is called cost-accounting (*Selbstkostenrechnung*). The value, which is to be treated as "cost" in cost-accounting and that which is treated as "loss" in the accounting of profit and loss, do not have the same sphere, although their spheres intermingle.

By "loss" is simply meant the phenomenon of value-loss within a period of time and is contrasted with the profit of the same period and thus is made the basis of calculating net profit. For example, the loss occasioned by the additional collection of taxes which were to be paid in the previous year or by the excess depreciation of properties, and all accidental value-loss occasioned by fire and other causes are to be regarded as "loss" in the accounting of profit and loss. But they are not inherent costs in the cost-accounting in the same period. Schmalenbach calls these losses which are not costs by the name of "neutral losses" (*Neutraler Aufwand*). This has the same meaning as Leitner's "inorganic costs" (*Anorganische Kosten*). Also the amount of depreciation that is not included in the accounting of profit and loss or reserves provided for the welfare of workers, are to be regarded as costs, they are not inherent

losses, inasmuch as they are value-losses as industrial means. As has been clarified, value-loss as means in the various stages in the process of industry, whether it is caused by physical relations or social relations, and whether the physical loss occurs in tangible objects or in intangible labour, is cost in each stage of industrial production. Therefore, the views of Nicklisch and Schmaltz both of whom regard as elements of gain such labour-values as salaries and wages as well as interest on the borrowed capital and exclude them from the conception of cost, are at variance with my idea of cost.

The nature of cost of production treated in this article may be summarised as follows: cost of production is value which is lost as productive means in the process of industrial production. It is the value the recovery of which is demanded by industrial principles through the sales prices of products created by that loss. Cost of production with the foregoing significance may be computed regarding products of quantity-unit as well as the total amount of products during a definite period. Cost of production in the former case is called unit cost of production while the latter is called total cost of production.

In considering the effects of output-curtailing on the development of cost of production, it is necessary to define output and output-curtailing at the outset. For further discussion of the present problem, I shall give them definitions as follows: By industrial output is meant that certain goods are produced in an industrial undertaking. Let us suppose that a given industry is provided with a given industrial equipment consisting of such basic factors as land, buildings, operative apparatus, implements, and machinery. Then, the maximum amount of goods produced by that industrial undertaking during a day, or a month or a year is inherently determined and controlled by the NORMAL capacity of its equipment and the NORMAL amount of working hours. The condition of production in which such maximum quantities of goods are produced by a given

industry is called "the normal degree of output". Thus, each industry's normal degree of output is fixed inasmuch as that industry is provided with a fixed equipment of production. The normal degree of output is a theoretical concept, but one may indicate the real quantities of output during some definite period. The condition of production indicated by real quantities of output during such a period may be termed the actual degree of output. Usually, the actual degree of output does not correspond with the normal degree of output, and the disparity between the two is all the more pronounced at a crisis like the present one.

As has been already shown in the above exposition, the content of the idea of the degree of output is the quantities of production during a definite period. The actual degree of output may be expressed in both absolute and relative figures. The absolute figures of quantities of production during a certain definite period indicate the absolute degree of output during the same period, while the percentage of actual quantities of production during a certain definite period to the normal quantities of production during the same period indicates the relative degree of output.

The term "output-curtailing" as treated in the present article signifies the fact that the actual degree of output in a given industry is reduced below the normal degree of output and that the actual quantities of production during a certain definite period are reduced below the normal quantities of production during the same period.

## II

I have above defined the conception of cost of production, output, and output-curtailing. I shall next consider the development of cost of production which arises from output-curtailing.

Usually an industrial undertaking is conditioned by the organic composition of its assets from time to time, necessitates a definite amount of production with which the unit



cost of production will show the minimum amount. Such a degree of output is called the "optimum degree of output."

If the total cost of production in an industrial undertaking during a certain period of time varies proportionally with the changes in the amounts of productive output during the same period, the unit cost of production will remain intact by the condition of output, and will prove constant in the absence of other influences.

If such a development is made by the cost of production in an industrial undertaking as a result of output-curtailling, such an industrial enterprise has not any optimum degree of output such as we have already seen. In actuality, there exists no industry whose total cost of production varies proportionally with the degree of its output; but there are cases in which the two maintain proportional relations to a considerably high degree.

In the face of the development made by capitalistic economy today, manufacturing industries of such a nature occupy a very insignificant position in the capitalistic production on the whole. An example of this may be found in handicraft industries which are unworthy to be called "industries." The effects which industries having a decisive significance in the capitalistic production receive from output changes in their unit cost of production are totally different from those on handicraft industries. It is the former industries that we are concerned here.

### III

Let us consider the question as to why the important manufacturing industries are vitally affected in their unit cost of production by the output curtailling. Before taking up this question, it is desirable for us to consider their material facilities, the condition of the management of production and monetary supply. Because there is a vast difference in these elements of production between those

industries whose unit costs of production are vitally affected by the output curtailment and those others whose unit costs of production are not thereby affected.

Let us first consider the material facilities for the production of manufacturing industries. It is generally known that since the middle of the 17th century, small-scale and handicraft industries made a rapid advance towards larger and more intensified methods of production, apparently under the stimulation of a great demand for war supplies and commodities of luxury. The motive power of this change undoubtedly is to be found in the fact that the latter system was more conducive to the object of capitalistic profit-making than the former. This transformation was destined to make a further advance. Of the various and manifold differences between the large-scale, intensive work and the small scale handicraft workshop, the one that attracts our keenest attention is the difference between material facilities. Needless to state, human labour was the decisive factor in the production of small-scale and handicraft industries. As the method of production shifted from smallscale and handicraft, and as the old method was changed to large-scale manufacturing organisation, the decisive factor in the process of production was gradually shifted from human labour to material facilities or implements. When the factory system finally came into existence, direct human labour could only maintain its subsidiary and supplementary significance. Such, indeed, is the essential indication of the large-scale machine-operated industrial organisation.

The mechanization of the means of production made rapid strides during the 18th century and down to the middle of the 19th century when the highest stage of capitalistic production was attained. Marx gives the reports of the inspector of British factories in elucidating the rapid shifting of position between direct human labour and machinery in the processes of production during the middle of the 19th century. Thus, the material characteristic of the internal organisation of the factory (which is the model workshop of

the modern industry) is the organic unity of operating, motor and transportation machines. The organic unity of such material factors of production has brought about the automatic operation of the workshop. Such operation may be taken as the model form of the so-called factory system. All this means that the work hitherto done by direct labour is now carried on by machinery or material equipment and that man only performs an insignificant and supplementary part in the internal organisation of production.

This superiority of material elements over human elements in the process of production really forms the central phenomenon in the communities of highly developed capitalism—a phenomenon which has made a great development in all industrial countries during the decade following the close of the Great War. This ascendancy of the material equipment in the manufacturing is undoubtedly due to the internal necessity of the relations of capitalistic production which had become international. At the same time, it was also stimulated and accelerated externally by the movement of rationalisation.

The application of automatic machinery and the adoption of the conveyer system are the highest earmarks of rationalisation in productive facilities. Moreover, rapid and frequent improvements made in machinery and the intensification of industrial competition have increased during the same period the number of machines which a single worker attends to. One need not present any positive demonstration to prove that, coupled with the expansion of land and buildings and the advance of horizontal consolidation in industrial organisation, the advance of the technical position of the material facilities in principal manufacturing industries have enabled them to occupy a decisive position as an industrial asset.

Let us next review the features in the management of production in manufacturing industries. The features here observed are produced by the pressure of the ascendancy of the material equipment in the composition of assets above

noted. On the one hand, these features show the systematization and materialization (*Vergeistigung und Versachlichung*) of industrial control and calculation: on the other hand, they show the expansion of indirect labour due to the development of the so-called Taylorism as well as to the facilities of industrial research within each industrial undertaking. These two features tend to expand the field of employment for persons of higher grades who are not direct labourers.

Lastly, we shall survey the financial aspect of manufacturing industries in recent years. The most remarkable feature observed in this connection is the increasing importance of credit against owned capital. We shall not inquire into the causes of this phenomenon. We shall be here content with the elucidation of facts in joint stock companies which occupy representative position in our present manufacturing industries.

The following table indicates the percentages of the amounts of debentures and loans to these of shareholders' capitals in important industrial corporations:

Year	First Term	Last Term
1925	28.7	32.5
1926	36.5	37.4
1927	39.0	40.8
1928	42.6	45.1
1929	46.5	48.0
1930	49.2	50.2
1931	51.2	—

The foregoing discussion has pointed out the characteristic features of modern manufacturing industries in their material facilities, the management of production and financing, as compared with purely handicraft manufacturing. These, together with the consumption of direct labour and raw materials, from the causes of value-loss in the means of production or, in other words, the causes of the cost of production.

However, it is generally recognized that there is an enormous difference between the costs of production caused by the foregoing factors and those caused by the direct labour and the consumption of materials, in respect of the relations between the amount of unit cost of production and the degree of output. In other words, this difference is seen in the development of cost according to the degree of output. True, a cause of cost does not rigidly prescribe the amount of cost, but there is no denying that there is a definite relationship between the two. All this means that, whereas the total amount of direct labour cost and cost of materials in a given industry proportionally vary according to the amount of production or according to the degree of output, the total amount of cost for material equipment, for labour supervision and for credit-capital is not affected directly by the variation of output.

To begin with, so long as material equipment for production as a means of production is maintained in the industrial assets, its value is depreciated due to its natural wear, general economic depression, technical improvements, and special industrial relations, etc.: and thus it adds to the cost of production. It is recognized that the depreciation of value because of these causes occurs at a uniform rate during a definite period in case an industry's output is below the normal degree, regardless of the degree of its productive output. In consequence, industrial principles demand that the amount of cost-depreciation during a definite period irrespective of the degrees of output should be fixed beforehand. In this connection, the amount of insurance on the material equipment should also be given consideration.

Secondly, the elevation and standardisation of the management of production necessarily increase the number of indirect laborers such as directors, clerks and shop-foremen, etc., whose relations of employment are comparatively fixed and whose wages are usually larger in amount than those of direct workers. As a result of this, industries are given constant indirect labor cost which is enormous in amount

and which occurs regardless of the degrees of output.

Thirdly, the interest on debentures and other forms of loans places a heavy burden on industries regardless of the degrees of output.

We have already seen that these costs showing a tendency toward an invariable development has increasingly become an important element in the composition of the industrial cost is one of the characteristics of the principal modern industries.

#### IV

As has been explained above, the total cost of production in the modern manufacturing industries during a definite period of time is the resultant of two sets of costs, namely, those having a tendency to be proportional with the degree of output and those having a tendency to remain constant. Supposing  $K$  represents the total production cost,  $p$  represents the unit of proportional cost,  $x$  represents the degrees of output, and  $F$  represents the invariable cost, we may have the following equation:  $K = p \cdot x + F$

The total cost of production of these industries during a definite period will expand with the rise of the degree of output during the same period: but the rate of the former will be smaller than the rate of the latter. As regards  $k$  or unit cost of production, we may have the following equation:  $k = \frac{K}{x} = p + \frac{F}{x}$ . Thus, the unit cost of production becomes the minimum amount on the maximum degree of output within the sphere in which there is no excessive degreciation due to the over-employment of the various means of production. Such a maximum degree of output in each industry is determined in respect to the total amount of production which, in turn, is limited by the amount and composition of the capital invested in each industry. Such a degree of output is called the normal degree of output, as we have already explained.

When the degree of output rises above the normal degree, there will inevitably rise an excessive use of the means of production, followed by an increase in the unit cost of production: on the other hand, when the degree of output has fallen below the normal degree, the unit cost of production will also tend to increase. In other words, the lowest unit cost of production is attained when an industry's output has become normal. Such a degree of output is also called the optimum degree of output. Now, the most important question in connection with this matter is what angle will be shown by the increase of the unit cost of production consequent on the expansion of the rate of output-curtailling, when the degree of output is fallen due to some cause. This increase of unit cost of production is not gradually made in a uniform rate of variation. When the unit cost of production increases due to the fall of the degree of output (below the normal degree), it does not greatly go up unless the point of output-curtailling goes far beyond the optimum degree. But when this point is passed and output-curtailling is still pushed on further, the rate of the increase registered on the part of unit invariable cost greatly widens, and unit cost of production consequently will expand sharply. This is the chief characteristic of the development of the unit cost of production consequent on output-curtailling in principal modern industries. True, the greater the proportion of the invariable cost in the composition of the total cost of production at the normal degree of output, the quicker will be the pressure of the invariable cost in the expansion of the unit cost of production due to output-curtailling. Heidebroek states that the heavy pressure of invariable cost makes itself felt when the rate of output-curtailling becomes between 30 or 50 per cent to the normal degree as the base of computation. It must be noted, however, that the foregoing discussion on the effects of output-curtailling on unit cost of production does not take into consideration the mollifying effects of the fall of labour wages, interest, and the prices of materials and other similar

circumstances. When output-curtailing is made, therefore, there will be cases in which unit cost of production does not actually expand as stated above.

## V

Suppose an over-production has resulted from the wholesale reduction of demand in the economic world and that some industries have formed monopolies in order to curtail their output and thereby to check the falling down of prices of their products. Other things being equal, the unit cost of production in these industries will be affected by their own act of output-curtailing in the manner already noted.

When, therefore, the prevailing prices (tending to depreciate) have been merely maintained, the resulting profit will be automatically cancelled by the expansion of the cost of production, and there will be no positive profit gained. Nor will such a maintenance of prices positively improve the power of profitability, although it may enable industries to escape from the destructive competition which is apt to beset modern industries. Thus, the policy of output-curtailing only has negative benefits and it cannot satisfy the essential want of industries. It is clear that the original objects of forming monopolies are not confined to such negative benefits.

Monopolies will not, therefore, be content with such a negative policy of output-curtailing. They will further go on to enforce output-curtailing to a greater degree, thereby decreasing the amount of stock in the market and raising prices beyond the prevailing rates, in their wish to secure greater possible profits. It is theoretically recognised that inasmuch as monopolies possess a power to control price relations in accordance with the degrees of general economic demand and with those of demand for their particular products, they may realise the foregoing object to a considerable extent, within the sphere limited by the intensity



of these general and particular economic market demands. In actuality even monopolies cannot raise prices unlimitedly. At the first monopolies are subject to the limitation of these demands and then if they should raise prices beyond a certain limit, there will appear various phenomena which will inevitably impede the attempt. The following will be the more important of such phenomena:

1. Competition of all kinds of goods to satisfy the entire market demand.
2. Competition on the part of industries supplying with substitutes having a similar power of satisfying the same market demand.
3. Increase in the power of the enterprisers of the same industry who are unwilling to participate in the monopolies.
4. The necessity of expanding the productive equipment of the monopolies themselves.
5. Dumping by members of the monopolies themselves.

We have already seen that when monopolies have raised the degree of output-curtailing by 30 or 50 per cent of full capacity (in order to meet the difficulties of an economic depression), the unit cost of production of these products will greatly expand. It is clear that market prices that will enable the monopolies to secure some profit over and above the increased cost of production will be far higher than the market prices that prevail when the normal degree of output is maintained. When, therefore, prices are so severely raised up by monopolies, there will arise various impediments above noted. In consequence, even if output-curtailing has been pushed beyond a certain point, it will be difficult to raise the prices to the degree that will enable the monopolies to compensate the augmented cost of production.

Nor will obstacles to an attempt to raise the prices of commodities by monopolies to such an extreme degree be limited to competition due to various economic causes: such attempt will undoubtedly meet the opposition of State action and hostile public opinion, the pressure of which will be

ultimately be brought to bear on monopolies making such anti-social attempt.

## VI

The policy of curtailing output resorted to by modern industries, in order to meet the difficulties of economic crisis enables them to raise the prices of their products to a certain extent, but is unable positively to improve their business condition. It is imperative then that the policy of output-curtailing should be re-enforced by other means. In the first place, curtailment should be effected in the cost of raw material. The prices of raw materials will fall as the result of output-curtailing and other causes which will cause the reduction of demand. Reduction should be also made in wages and other material provision of direct labourers whose power of resistance is comparatively weak. Side by side with output-curtailing, rationalisation should be effected in the use of the labour force, and a relative reduction of the number of employees should be made. All these will tend to weaken the inherent expansion of the cost of production which is made inevitable, for these are a super-proportional curtailment of the relative costs of materials and the direct labour.

However, in the case of output-curtailing in modern industries, the curtailment of proportional cost does not yet give any decisive effect on the composition of cost of production. Accordingly, attention should be directed to a more important matter. In other words, curtailment should be made in invariable costs: to be more exact, the number and salaries of high-grade employees should be reduced: a reduction should be made in the value of the fixed equipment: and the rate of interest on credit capital should be lowered. However the difficulty of curtailing these invariable expenses far surpasses that of curtailing the proportional expenses. Thus, it becomes inevitable that the work of coping with industrial distress should extend beyond the

individual undertaking and into the entire field of economic activities. First of all, the expansion of demand in the market should be extended as far as possible: the policy of monetary inflation should be pursued: public works for the purpose of relief should be undertaken. The leaders of industry will naturally welcome these and other attempts at enhancing demand power from their economic standpoint. It is, however, clearly perceived that all these policies of artificial inflation are bound to give rise to injurious reactions all over the national economy.

So lastly, an attempt will be made by capital for a thorough-going monopolisation of industries through the intervention of State power in order to eliminate all together the obstacles in the way of realizing the agreeable effect that are inherently possible by output-curtailing. Such an attempt will be manifested by demand for higher tariff rates, for industrial amalgamation and for an industrial licence system. Such a demand will be given stimulation by a cry for a national planning of industries such as has been raised at the present crisis.

The tendency of monopolisation will be pushed until the ideal of "one national organisation" in each industry is asserted. However, it must be noted that the further monopolisation is carried out, the greater will be the function of relieving the profitability of each industry through output-curtailing as a method of coping with economic distress. But, so far as the economic demand of the market increasingly dwindles wholesale, it would be impossible, however throughouly an industry be monopolised, to escape from economic privation by raising prices indefinitely through output-curtailing. At any rate, it is undeniable that industries, necessitated by the pressure of invariable cost will advance towards a more and more through-going monopolisation. I am not here concerned with the nature of reactions to such a thorough-going monopolisation.

ICHIRO OTSUKA